QUICK GUIDE TO THE 8 REQUIRED ELEMENTS

Congress identified eight required elements to be addressed in each state's Comprehensive Wildlife Conservation Strategy - **boxed text below**. The National Advisory Acceptance Team (NAAT) provided additional 'acceptance guidance' on each element (***bold italics below***). The following is a list of those elements, NAAT guidance on each element, a brief summary of how the element/guidance was addressed in Wisconsin's *Strategy for Wildlife Species of Greatest Conservation Need: A Comprehensive Wildlife Conservation Plan* (*Strategy*), and a table indicating page numbers where information pertaining to the element can be found in the *Strategy*.

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1. Information on the distribution and abundance of species of wildlife, including low and declining populations as the State fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the State's wildlife.

A. The Strategy indicates sources of information (e.g., literature, data bases, agencies, individuals) on wildlife abundance and distribution consulted during the planning process.

An important guideline for creating Wisconsin's *Strategy* was to use existing information on Wisconsin's species and habitats. We relied heavily on existing databases (e.g., Natural Heritage Inventory, Geographic Distributions of the Amphibians and Reptiles of Wisconsin, Wisconsin Macroinvertebrates, etc), previous comprehensive planning efforts (e.g., *Ecological Landscapes of Wisconsin: Wisconsin's Ecosystem Management Planning Handbook;* Partners in Flight North American Landbird Conservation Plan, U.S. Shorebird Conservation Plan, etc.), additional published literature, and other unpublished technical documents to determine abundance and distribution of native species in Wisconsin. Species Teams then reviewed and evaluated available information for each species, and augmented this existing information with more recent data. For example, information on distribution and abundance of native fish species was compiled from Green (1935), Becker (1983), Fago (1992), Lyons (1996), and Lyons and Fago (2000). This published information was augmented with more recent information in the Natural Heritage Inventory Database and the Wisconsin DNR's Fisheries and Habitat Database, along with other unpublished data and personal observations. The Approach and Methods Chapter (Chapter 2) provides rationale and information on the databases, literature, and experts consulted in the planning process. Additional references are located in the individual taxa chapters for the main taxonomic grouping.

B. The Strategy includes information about both abundance and distribution for species in all major groups to the extent that data are available. There are plans for acquiring information about species for which adequate abundance and/or distribution information is unavailable.

Wisconsin's *Strategy* includes information on abundance of Wisconsin's native vertebrate species at two spatial scales: Global Relative Abundance and State Rarity (a measure of relative abundance within the state, derived from Wisconsin's Natural Heritage Inventory Program data). This information along with

an explanation of other criteria used to select Species of Greatest Conservation Need, can be found in the Approach and Methods Chapter (Chapter 2). Our vertebrate Species of Greatest Conservation Need identification process resulted in a list of 152 species out of 556 species considered: 84 birds, 30 fish, 24 herptiles, and 14 mammals. In Appendix B we note those Species of Greatest Conservation Need for which we lack sufficient data on State Rarity, State Threats, State Population Trend and/or Global Threats. Also found in Appendix B are native species that were assessed and were not considered of "greatest conservation need", and either require additional inventory or life history data, or represent a large portion of the continental population. In the latter case, Wisconsin may have some unique roles to play in the overall conservation of those species, even though they are not currently significantly rare or declining in our state.

We present distribution information for vertebrate Species of Greatest Conservation Need in two ways. First, the summary for each vertebrate Species of Greatest Conservation Need includes a map showing its probability of occurrence in each Ecological Landscape in Wisconsin. Second, we report the strength of each species' association with each habitat (i.e., natural community) type. Although we cannot currently map natural communities, we present, in tabular form, the Ecological Landscape/natural community combinations where each species is most likely to occur.

Detailed information on the abundance and distribution of most invertebrates is sorely lacking; however, scientists do have a general sense of the distributions of some of the more than 25,000 invertebrate species in Wisconsin. The initial step in identifying invertebrate Species of Greatest Conservation Need was a detailed assessment of the state of scientific knowledge about invertebrates in Wisconsin. The results of this assessment were used to focus attention on groups with enough information to allow further evaluations, and led to the identification of 530 invertebrate Species of Greatest Conservation Need: 58 non-arthropod invertebrates, 21 non-insect arthropods, and 450 insects. Other categories of invertebrates were created to track those species or groups of species not considered of "greatest conservation need" for which:

1) there is an unknown conservation need because;
    a. basic taxonomy and/or life history research is needed;
    b. their taxonomy and life history are relatively certain, but their distribution and abundance is unknown; or
    c. the species are not listed as endangered or threatened in Wisconsin, but are listed as such in an adjacent state. This category is compromised of invertebrate species that have an unknown conservation need in Wisconsin, but have been recognized as rare or declining elsewhere.

2) A large portion of the continental population resides in Wisconsin indicating that the state may have some unique role to play in the overall conservation of these species.

The Monitoring Chapter (Chapter 5) provides an overview of current species and natural community (habitat) monitoring efforts in Wisconsin that are relevant to the Species of Greatest Conservation Need and identifies gaps in those efforts for taxonomic groups (e.g., birds, fish) and natural community (habitat) groups (e.g., aquatic, barrens). Monitoring plans for addressing those gaps are provided when possible. Implementation of the *Strategy* will include continuing work with various WDNR programs and other agencies or groups that collect information on these species. Priority conservation actions found in various locations in the *Strategy* describe plans for updating and acquiring information about individual species which lack adequate information on their abundance and distribution.

Chapter/Section	Pages
2.3.1 Methodology for Determining Vertebrate SGCN	2-56
2.3.2 Methodology for Determining Invertebrate SGCN	2-65
3.1.2.3 Individual Bird SGCN Summaries	3-15
3.1.3.3 Individual Fish SGCN Summaries	3-175

C. The Strategy identifies low and declining populations to the extent data are available.

Two approaches for identifying low and declining populations, one for vertebrates (explained in detail in Section 2.3.1) and one for invertebrates (Section 2.3.2), were developed in order to meet the required elements. In both the vertebrate and invertebrate approach, we used existing data, documented the rationale, applied objective and scientifically defensible methods, allowed for efficient peer reviews, considered multiple categories of Species of Greatest Conservation Need and then assessed habitat (natural communities) at a broad scale.

Wisconsin's Strategy includes information on Global Population Trend, Global Relative Abundance, State Rarity, and State Population Trend for vertebrate species. This information provided the primary means of identifying low and declining populations of vertebrate species.

Chapter/Section	Pages
2.3.1 Methodology for Determining Vertebrate SGCN	2-56
2.3.2 Methodology for Determining Invertebrate SGCN	2-65
3.1 Vertebrate SGCN	3-1
3.1.2.3 Individual Bird SGCN Summaries	3-15
3.1.3.3 Individual Fish SGCN Summaries	3-175
3.1.4.3 Individual Herptile SGCN Summaries	3-222
3.1.5.3 Individual Mammal SGCN Summaries	3-274
4.3 Invertebrate SGCN	4-2

D. All major groups of wildlife have been considered or an explanation is provided as to why they were not (e.g., including reference to implemented marine fisheries management plans). The State may indicate whether these groups are to be included in a future Strategy revision.

We considered all vertebrate and invertebrate species native to Wisconsin. Exotic species (e.g., ring-necked pheasant), extinct species (e.g., blackfin cisco), and those species that are considered extralimital or accidental (e.g., northern mockingbird) were removed from further consideration early in the process. The state of knowledge assessment for invertebrates represents the first comprehensive, documented assessment for Wisconsin.

The development of the *Strategy* is part of a dynamic vision for the future of conservation of low or declining populations of wildlife in Wisconsin. This is the first comprehensive opportunity to plan for and fund programs to conserve these species and the habitats they require, both as a state and as a nation. We will evaluate, update, and adapt our state *Strategy* in the future as circumstances change and new information is learned.

Chapter/Section	Pages
2.3 Methodology for Determining SGCN	2-55
2.3.1 Methodology for Determining Vertebrate SGCN	2-56

E. The Strategy describes the process used to select the species in greatest need of conservation. The quantity of information in the Strategy is determined by the State with input from its partners, based on what is available to the State.

Vertebrate Species of Greatest Conservation Need were selected based on evaluation of all native vertebrate species in Wisconsin by the Species Teams. Each species was evaluated based on seven quantitative criteria that helped define the risk and conservation need of the species. A cut line was then established above which all species were considered Species of Greatest Conservation Need. Species currently listed as threatened or endangered at the state or federal level were added to the list of Species of Greatest Conservation Need, even if the species originally fell below the cut line. This process is described in the Approach and Methods Chapter (Sections 2.3.1), and Appendix B provides all native Wisconsin vertebrate species considered during the process of determining Wisconsin's Species of Greatest Conservation Need.

As described in Element 1A, we conducted an initial assessment of the state of scientific knowledge for invertebrates, which assisted in focusing on groups to further evaluate for identifying Species of Greatest Conservation Need. This process is described in detail in the Approach and Methods Chapter (Section 2.3.2).

2. Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in (1).

A. The Strategy provides a reasonable explanation for the level of detail provided; if insufficient, the Strategy identifies the types of future actions that will be taken to obtain the information.

We used a three step process to identify the locations and conditions of habitat key to the conservation of Wisconsin's Species of Greatest Conservation Need. First, each of the vertebrate Species of Greatest Conservation Need was associated with one or more natural community (habitat) types within Wisconsin by the Species Teams. The species-natural community associations were identified as significant, moderate, minimal, or absent. The level of association indicates the potential importance of each natural community type for the conservation of each of the vertebrate Species of Greatest Conservation Need. For example, those natural communities that are essential for a given species to complete its life cycle were scored as "significant" for that species.

Second, each of these natural community types was evaluated by the Ecosystem Management Planning Team (EMPT) and other experts to assess its status and potential for protection, management and/or restoration in different areas of the state. Ecological Landscapes were used as the geographic unit for this evaluation. Thus for each Ecological Landscape in Wisconsin, each natural community type was described as having a major opportunity for conservation, important opportunity for conservation, present, or absent.

The third and final piece of the puzzle was determining the probability that each vertebrate Species of Greatest Conservation Need occurs in each Ecological Landscape. The probabilities (identified by the Species Teams) were classified as high, moderate, low, or none.

Combining the information on natural community status with information about where each species is most likely to occur, we identified the location and relative condition of natural communities essential for the conservation of each vertebrate Species of Greatest Conservation Need.

Because habitat information related to invertebrates is often lacking, detailed analysis was not possible for invertebrates. However, general information on key habitats for some invertebrates is discussed in Section 4.4.

A more thorough description of the process for identifying locations and status of natural communities key to the conservation of each Species of Greatest Conservation Need, as well as a detailed description of each natural community type, can be found in the sections shown below.

B. Key habitats and their relative conditions are described in enough detail such that the State can determine where (i.e., in which regions, watersheds, or landscapes within the State) and what conservation actions need to take place.

The 66 terrestrial natural community types and 8 aquatic natural community types identified in this *Strategy* are described in detail in Section 3.3. For each natural community type (both aquatic and terrestrial), we provide a thorough description of the community, an overview of the status and condition of the community in Wisconsin, detailed information on what Species of Greatest Conservation Need depend on this natural community type, and where in Wisconsin (in which of the 16 Ecological Landscapes) the best opportunities exist for conservation and/or restoration of the community type. Together, this detailed and geographically specific information provides managers with a guide to where efforts may best be focused to conserve Species of Greatest Conservation Need and their essential habitats (natural communities). *This information forms the bulk of the Strategy, which we feel is appropriate given the fact that it is essential for guiding future conservation efforts for nearly all vertebrate Species of Greatest Conservation Need, as habitat related threats and issues are generally the most critical threats facing these species and therefore must be addressed to ensure their conservation.*

3. Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats.

A. The Strategy indicates sources of information (e.g., literature, databases, agencies, or individuals) used to determine the problems or threats.

An important guideline for creating Wisconsin's *Strategy* was to use existing information on Wisconsin's species and habitats. We relied heavily on information from previous comprehensive planning efforts, published literature, and other unpublished technical documents to determine critical threats and issues facing species and their habitats in Wisconsin. This information was reviewed and evaluated by teams of experts: Species Teams assessed threats and issues facing individual species, and the Ecosystem Management Planning Team (EMPT) and Species Teams assessed threats and issues facing terrestrial and aquatic natural communities. In all cases, experts thoroughly evaluated existing information and augmented this information when possible with more recent unpublished data and observations. For example, information used to identify threats and issues facing individual terrestrial natural communities is largely based on two recent comprehensive reports produced by the WDNR: *Ecological Landscapes of Wisconsin Handbook* and *Wisconsin's Biodiversity as a Management Issue*. Information from these reports was then supplemented and updated, largely by the groups of experts which originally wrote the reports, to provide even more detailed and geographically specific information based on their professional knowledge and more recent research, survey and monitoring efforts.

The final step in assessing threats to species and their habitats was extensive peer review by a broader group of experts across the state. A list of published information used to identify threats and issues facing individual species is included at the beginning of each taxa group in Chapter 3. A complete list of references can be found in the bibliography, including published references used for assessment of threats to natural communities.

B. The threats/problems are described in sufficient detail to develop focused conservation actions (for example, "increased highway mortalities" or "acid mine drainage" rather than generic descriptions such as "development" or "poor water quality").

Threats and issues facing species and their habitats are defined in the *Strategy* as specifically and in as much detail as possible. In most cases, we've identified specific threats/issues facing both species and natural communities (habitats). In some cases, a broadly defined threat or issue was appropriate, as we may not yet know exactly what specific aspect of the subject in question negatively impacts the species or natural community. This is especially true for many of the fish identified as Species of Greatest Conservation Need; the reasons for their declines and continued low abundance remain largely unknown.

Threats/issues facing natural communities are identified at two geographic scales: for the entire State and by Ecological Landscapes (regions). This is appropriate because many threats are relevant for natural communities across a broad area of the state, while others are specific to a region or more local area. For example, for the Southeast Glacial Plains Ecological Landscape, fragmentation and development of and around restorable dry prairie sites could prevent the use of prescribed fire. On the statewide scale, however, encroachment by brush and exotic species invasion threaten dry prairie throughout its range. Descriptions of threats for each of the 66 natural communities addressed in the Strategy can be found within their respective section in the document. For those people looking for a broad, introductory level of information, we also provide an overview of general threats and issues facing entire taxa groups and Ecological Landscapes. We hope the different levels and scales of information, taken as a whole, will meet the needs of a wide variety of users.

Information on threats and issues facing Wisconsin's Species of Greatest Conservation Need and their natural communities (habitats) is found in the following sections:

Chapter/Section	Pages
3.1.2.2 Bird SGCN: General threats, Issues and Conservation Actions	3-11
3.1.2.3 Individual Bird SGCN Summaries	3-15
3.1.3.2 Fish SGCN: General threats, Issues and Conservation Actions	3-173
3.1.3.3 Individual Fish SGCN Summaries	3-175
3.1.4.2 Herptile SGCN: General threats, Issues and Conservation Actions	3-217
3.1.4.3 Individual Herptile SGCN Summaries	3-222
3.1.5.2 Mammal SGCN: General threats, Issues and Conservation Actions	3-269
3.1.5.3 Individual Mammal SGCN Summaries	3-274
3.3 Natural Communities Associated with Vertebrate SGCN: Opportunities, Threats, and Conservation Actions	3-385
4.1 General Invertebrate Threats and Issues	4-1
4.4 Threats, Issues, and Priority Conservation Actions by Taxonomic Group	4-13

C. The Strategy considers threats/problems, regardless of their origins (local, state, regional, national and international), where relevant to the State's species and habitats.

Wisconsin's *Strategy* considers threats and issues facing its Species of Greatest Conservation Need and their habitats, regardless of the origin of the problem. For example, we note that deforestation of mid-elevational tropical forests on the east slope of the Andes Mountains where Cerulean Warblers winter is a significant contributor to its long-term decline. As an example of local threats, inadequate storage of animal waste and groundwater pumping are identified as contributors to the degradation of coldwater streams. Other examples are found throughout the *Strategy* where threats and issues facing species and their habitats are discussed (please see the Chapters/Sections referenced in Element 3B).

D. If available information is insufficient to describe threats/problems, research and survey efforts are identified to obtain needed information.

Wisconsin's Strategy identifies threats and issues facing species and their habitats as specifically as possible. In some cases, we do not have the level of detail needed to develop conservation strategies for a species or natural community (habitat). When this occurs, we identify the type of information needed as a priority conservation action. For example, we point out that more information on distribution, population trends and limiting factors for the western sand darter is needed to inform and focus conservation efforts targeted at this species. Similarly, we point out that more research is needed to help us understand how to best manage the alder thicket natural community type (habitat). Other examples are found throughout the *Strategy* where threats and issues (and associated conservation actions) are identified (please see the Chapters/Sections referenced in Element 3B).

E. The priority research and survey needs, and resulting products, are described sufficiently to allow for the development of research and survey projects after the Strategy is approved.

We believe that information presented in Wisconsin's *Strategy* is adequate to allow for future development of research, survey and monitoring projects. In some cases, we are already aware of very specific information needs, and these are clearly identified in the report. For example, research is needed on the potential impacts of non-native earthworms on four-toed salamanders. In other cases, information presented is, by necessity, more general in nature. This often stems from a lack of information about the entire taxonomic group, species, or natural community. For example, for invertebrates that are relatively unknown, a major difficulty researchers and managers face is the lack of readily available, easy-to-use references for their accurate identification.

This *Strategy* is a guidance document, meant to be used as a tool by conservation agencies, organizations and individuals throughout the state. No single report can provide all information to all parties. Therefore, we expect (and in fact have already observed through the State Wildlife Grant process) that information on research, survey, and monitoring needs identified in the report will be supplemented by discussions with species experts and local biologists, leading to specific on-the-ground projects implemented at the appropriate scale to gather the needed information. Priority research, survey and monitoring needs are identified as conservation actions throughout the report (please see the Chapters/Sections referenced in Element 3B).

4. Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions.

A. The Strategy identifies how conservation actions address identified threats to species of greatest conservation need and their habitats.

In most cases there is a specific conservation action for each identified threat. For example, for the oak opening natural community there is a lack of specific information on the location and abundance of restorable sites in some Ecological Landscapes. The conservation action that addresses this threat is to conduct additional survey work in certain landscapes to identify restorable sites. For the prairie racerunner lizard, loss and degradation of sand prairie habitat due to natural succession, exotic species, development, and habitat fragmentation are known threats. Conservation actions that address these threats are exotic species control and creating partnerships and incentives to protect and restore the rare natural community type that this species depends on. Additional threats and specific conservation actions are located throughout the natural community and individual species sections.

Chapter/Section	Pages
3.1.2.3 Individual Bird SGCN Summaries	3-15
3.1.3.3 Individual Fish SGCN Summaries	3-175
3.1.4.3 Individual Herptile SGCN Summaries	3-222
3.1.5.3 Individual Mammal SGCN Summaries	3-274
3.3 Natural Communities Associated with Vertebrate SGCN: Opportunities, Threats, and Conservation Actions	3-385
4.4 Threats, Issues, and Priority Conservation Actions by Taxonomic Group	4-13

B. The Strategy describes conservation actions sufficiently to guide implementation of those actions through the development and execution of specific projects and programs.

Wisconsin's *Strategy* describes conservation actions at a natural community (habitat) and species level for vertebrates. Section 3.3 provides descriptions of conservation actions needed to address specific habitats used by many Species of Greatest Conservation Need. Specific conservation actions for individual vertebrate Species of Greatest Conservation Need are described within individual species summaries. Conservation actions for invertebrates are described as general priority conservation actions for all Invertebrate Species of Greatest Conservation Need and by taxonomic group (please see the Chapters/Sections references in Element 4A).

C. The Strategy links conservation actions to objectives and indicators that will facilitate monitoring and performance measurement of those conservation actions (outlined in Element #5).

The *Strategy* outlines the conceptual approach that will be used to monitor and measure the performance of conservation actions. Chapter 5 (Monitoring) describes how objectives and indicators are an integral component of performance measurement and the methodology that will be used to measure performance. The approach is described within the context of an adaptive management process that will ensure that conservation action monitoring and performance measurement will help us be responsive to new information and maximize our long-term effectiveness.

There was insufficient time to develop specific objectives and indicators for priority conservation actions prior to the October 1, 2005 submission. As a result, important first steps in the implementation of Wisconsin's *Strategy* will be to identify priority threats and conservation actions at a regional level within the state. As part of that process, specific performance objectives and indicators, or metrics, will be developed for the priority threats and conservation actions to facilitate performance measurement.

D. The Strategy describes conservation actions (where relevant to the State's species and habitats) that could be addressed by Federal agencies or regional, national or international partners and shared with other States.

Potential partners that could address conservation actions are, where possible, described directly within conservation actions for each species or natural community (habitat). For example, for the American Bittern continued protection of habitat through the North American Wetlands Conservation Act and Wetlands Reserve Program (USDA Natural Resources Conservation Service) is identified as a conservation action. As an example at the natural community (habitat) level, landowner enrollment in federal programs that protect and restore grasslands (e.g., Conservation Reserve Program, Conservation Reserve Enhancement Program, Wildlife Habitat Incentives Program, Environmental Quality Incentives Program, Grasslands Reserve Program, and Wetland Reserve Program) is identified as a conservation action for surrogate grasslands. Please see the Chapters/Sections referenced in Element 4A for more examples.

Once surrounding state strategies are also completed, and as implementation of Wisconsin's *Strategy* begins, opportunities for collaboration on projects will be pursued.

E. If available information is insufficient to describe needed conservation actions, the Strategy identifies research or survey needs for obtaining information to develop specific conservation actions.

Conservation actions are identified for every vertebrate Species of Greatest Conservation Need and their natural communities (habitats). Information was usually sufficient to describe needed conservation actions; however, in some cases, more life history information or inventory is needed before more specific priority actions can be identified. Conservation actions for invertebrate Species of Greatest Conservation Need could not be developed at the same level of detail due to the general lack of information available. Additional research or survey needs are identified when appropriate (please see the Chapters/Sections referenced in Element 4A).

F. The Strategy identifies the relative priority of conservation actions.

For Wisconsin's *Strategy*, species and habitat experts were asked to identify only those conservation actions that were a priority for each species or natural community (habitat). As a result, all of the identified conservation actions in the plan are considered an equal priority at the individual species level. Within the plan, however, there are hundreds of species and habitat priority conservation actions identified. To further determine the relative priority of conservation actions, ecological priorities are identified at a landscape scale by collectively evaluating species' distributions; species associations with habitats (natural communities); and the opportunity for protection, restoration, and/or management of each habitat (natural community) in each Ecological Landscape. Instances where these three components are maximized are considered ecological priorities. So, for example, we know that there is a high probability that ornate box turtles occur in the Southwest Savanna Ecological Landscape and that they are significantly associated with dry prairie, which is a major opportunity habitat in the Southwest Savanna Ecological Landscape. As a result, conservation actions for ornate box turtles and dry prairie habitat in the Southwest Ecological Landscape are considered ecological priorities.

Further refinement and assessment of priority conservation actions will be completed during *Strategy* implementation. Important first steps in the implementation process will be refining ecological priorities and associated conservation actions so that they can be applied at the regional level.

5. Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions.

A. The Strategy describes plans for monitoring species identified in Element #1, and their habitats.

Chapter 5 provides an overview of current species and natural community (habitat) monitoring efforts in Wisconsin that are relevant to the Species of Greatest Conservation Need and identifies gaps in those efforts for taxonomic groups (e.g., birds, fish) and natural community (habitat) groups (e.g., aquatic, barrens). Monitoring plans for addressing those gaps are provided when possible.

There was insufficient time to develop specific monitoring programs for individual Species of Greatest Conservation Need and natural communities (habitats); however, monitoring programs will be developed over the upcoming years and months as implementation of the *Strategy* begins. Important first steps in the implementation of Wisconsin's *Strategy* will be to develop monitoring plans for individual species and natural communities.

Chapter/Section	Pages
5.4 Designing and Implementing a CWCP Monitoring Program	5-6
5.5 SGCN Monitoring	5-10
5.6 SGCN Habitat (Natural Community) Monitoring	5-20

B. The Strategy describes how the outcomes of the conservation actions will be monitored.

Outcomes of conservation actions will be monitored within the context of adaptive management utilizing performance indicators. Performance indicators are management tools that measure work performed and results achieved by stating inputs, outputs, and outcomes in specific and measurable terms.

There was insufficient time to develop specific monitoring programs for priority conservation actions prior to the submission deadline. As a result, important first steps in the implementation of Wisconsin's *Strategy* will be to recommend priority threats and conservation actions at a regional level and develop specific conservation action performance measures and monitoring strategies to address them.

Chapter/Section	Pages
5.2 Adaptive Management	5-2
5.3 Conservation Action Performance Measures	5-4

C. If monitoring is not identified for a species or species group, the Strategy explains why it is not appropriate, necessary or possible.

Monitoring gaps and needs are identified by group for birds, fish, herptiles, mammals, and invertebrates. All of these identified needs are appropriate, necessary, and possible.

Chapter/Section	Pages
5.5 Species of Greatest Conservation Monitoring	5-10

D. Monitoring is to be accomplished at one of several levels including individual species, guilds, or natural communities.

Monitoring is to be accomplished at two levels within the *Strategy*: species groups (e.g., birds, fish) and natural community groups (e.g., aquatic, barrens). A full discussion of how this will be accomplished is found in the Monitoring Chapter (Chapter 5). Future efforts will include developing monitoring plans for individual species and natural communities.

Chapter/Section	Pages
5.1 Overview and Purpose of Monitoring SGCN, Natural Communities, and Priority Conservation Actions	5-1
5.4 Designing and Implementing a CWCP Monitoring Program	5-6
5.5 SGCN Monitoring	5-10
5.6 SGCN Habitat (Natural Community) Monitoring	5-20

E. The monitoring utilizes or builds on existing monitoring and survey systems or explains how information will be obtained to determine the effectiveness of conservation actions.

Numerous existing monitoring and survey systems by WDNR and other agencies or groups are listed in Appendix D. The Monitoring Chapter identifies existing monitoring efforts and builds upon them by identifying gaps as they relate to Species of Greatest Conservation Need and their associated natural communities (habitats). By utilizing this information, and combining it with performance measures and the adaptive management approach, we will be able to determine the effectiveness of conservation actions.

Chapter/Section	Pages
5.4 Designing and Implementing a CWCP Monitoring Program	5-6
5.5 SGCN Monitoring	5-10
5.6 SGCN Habitat (Natural Community) Monitoring	5-20
Appendix D. Existing or Historic Inventory and Monitoring Programs in Wisconsin	

F. The monitoring considers the appropriate geographic scale to evaluate the status of species or species groups and the effectiveness of conservation actions.

The Monitoring Chapter considers the appropriate geographic scale to evaluate the status of species and the effectiveness of conservation actions. The entire discipline of landscape ecology is based on understanding the spatial relationships (i.e., patch size, shape, landscape position) of habitats at appropriate scales. Assessments conducted for this *Strategy* identified numerous species or taxa-specific surveys, but few natural community or ecoregional monitoring programs. Most monitoring efforts in Wisconsin focus on species and habitat composition, leaving gaps in our knowledge of ecosystem structure and function. At a coarse landscape-level, there are monitoring efforts that focus on the placement and condition of natural communities, and trends that affect them. Efforts are outlined to facilitate landscape habitat and ecosystem monitoring in Wisconsin to encompass the range of geographical scales appropriate for monitoring conservation actions.

Chapter/Section	Pages
5.4 Designing and Implementing a CWCP Monitoring Program	5-6
5.5 SGCN Monitoring	5-10
5.6 SGCN Habitat (Natural Community) Monitoring	5-20

G. The Strategy is adaptive in that it allows for evaluating conservation actions and implementing new actions accordingly.

Monitoring conservation actions is a critical step in wildlife conservation because it measures progress toward meeting objectives and provides evidence for continuation or change in the proposed management regime. As a component of the adaptive management cycle, monitoring ensures that each conservation action is linked to a specific hypothesis that evaluates the success or failure of the action, and, in turn, influences the adaptation of existing activities or the design of future actions. The *Strategy* allows for evaluation and adaptive modification of conservation actions through use of the principles associated with the adaptive management cycle.

Chapter/Section	Pages
5.2 Adaptive Management	5-2
5.3 Conservation Action Performance Measures	5-4

6. Descriptions of procedures to review the strategy at intervals not to exceed ten years.

We outline a plan for short term interim reviews of the *Strategy* at approximately 2-year intervals, followed by a complete review and revision of the *Strategy* within the ten year period required by the U.S. Fish &Wildlife Service. This two-tiered review process will ensure that the *Strategy* stays 'light on its feet' and responsive to changing information and conditions. WDNR Endangered Resources' staff will lead an effective, efficient, and inclusive short-term review approximately every two years to check in with Department staff and conservation partners and identify essential changes needed to address new information about species and their circumstances.

The complete 10-year review and revision will build upon the interim reviews, and provide an opportunity to review and reassess the *Strategy* and its impact on conservation of Species of Greatest Conservation Need and their habitats in Wisconsin. The 10-year review will be coordinated by Wisconsin DNR Endangered Resources staff and will include experts from throughout the WDNR and other agencies and conservation partners. This 10-year review will include a review of the basic approaches and methods used to develop the initial *Strategy*, and of needed updates and changes to core data and information. We will also identify issues and topics that were beyond reach during the development of the first *Strategy* and select those that are of priority to cover during the revision. Importantly, the review will also include assessment of the *Strategy's* influence on the status of Wisconsin's Species of Greatest Conservation Need, the status and use by the DNR and other partners of the supporting database for the *Strategy*, and the results of outreach efforts and coordination and communication among conservation partners.

Chapter/Section	Pages
5.2 Adaptive Management	5-2
Chapter 7 Review and Revision	7-1

7. Descriptions of the plans for coordinating, to the extent feasible, the development, implementation, review, and revision of the plan with Federal, State, and local agencies and Indian tribes that manage significant land and water areas within the State or administer programs that significantly affect the conservation of identified species and habitats.

A. The State describes the extent of its coordination with and efforts to involve Federal, State and local agencies, and Indian Tribes in the development of its Strategy.

Early in our planning efforts, we contacted conservation partners in other agencies, organizations, and Native American tribes to invite them to become involved in developing the *Strategy.* From these initial invitations, we formed a core Advisory Team consisting of representatives from 21 agencies and organizations. Federal agencies represented included USDA Forest Service, USDA Natural Resources Conservation Service, and US Fish and Wildlife Service. The Wisconsin Department of Transportation participated, as well as the University of Wisconsin-Madison, the Milwaukee Public Museum, the Great Lakes Indian Fish and Wildlife Commission. In addition, the team included representatives of private companies and non-profit organizations (e.g. Wisconsin County Forest Association, Wisconsin Association of Lakes, WE Energies, The Nature Conservancy, Madison Audubon Society, and Trout Unlimited).

In addition, external partners served on each of our five Species Teams (e.g., Bird, Fish, Herptile, Mammal, and Invertebrates). The Species Teams did important core work for the plan by determining Species of Greatest Conservation Need and their associations with Ecological Landscapes and natural communities, addressing species threats and conservation actions, and playing key roles in providing scientific data and peer review throughout the process.

Other state and local agencies and organizations were kept informed through periodic updates on plan progress and development. Throughout the process, our website provided updated information to all interested parties on *Strategy* development. We believe our coordination with other agencies and organizations has produced a comprehensive and technically sound *Strategy* that will be widely supported throughout Wisconsin.

Chapter/Section	Pages
2.1 Approach and Methods: Organizational Structure	2-1
6.1 Communication and Coordination for *Strategy* Development	6-1

B. The State describes its continued coordination with these agencies and tribes in the implementation, review and revision of its Strategy.

Coordination and communication with other agencies, tribes, and organizations will be key to successful implementation--through translation of the needs identified in the *Strategy* into on-the-ground projects that help to conserve Species of Greatest Conservation Need and their habitats. Avenues have already been set up within the State Wildlife Grant process to seek and support cooperation among partners. Agencies, tribes and organizations will be central to review and revision of the *Strategy*. Participation from various partners, such as those from the Advisory Team and the Species Teams that assisted in the development of the *Strategy*, will be sought as part of the 10 year review and revision process. Please review the following sections for more detailed information.

Chapter/Section	Pages
6.1 Communication and Coordination for Plan Development	6-1
6.2 Communication and Coordination for Plan Implementation	6-3
Chapter 7 Plan Review and Revision	7-1

8. Documentation of broad public participation during development and implementation of the Strategy.

A. The State describes the extent of its efforts to involve the public in the development of its Strategy.

Public participation and input was sought from the very beginning to provide opportunities for participation in the development of the *Strategy* using a variety of methods. A set of eleven interactive teams, composed of both Wisconsin DNR staff and external partners, formed the core group of plan developers; Chapter 2 provides a description of each team, including their roles, responsibilities and members.

For the broader range of interested conservation partners and the public, we sought to provide balanced and objective information about the *Strategy's* purpose, approach, outcomes, and potential benefits. A series of initial mailings were followed by Regional Briefings around the state where participants could learn about the planning effort and provide feedback and assist in identifying specific threats, issues, and conservation actions for the Species of Greatest Conservation Need and their habitats. The briefings were followed by additional mailings, to update participants on the process. Finally, a statewide review of the draft plan provided an opportunity for all interested parties to review the technical document. An update with the Executive Summary, including plan highlights, announcements, and information on the statewide technical review, was also sent to our 600-person mailing list, posted on the website, and announced in statewide press releases. Comments received from the statewide review were used in revising the *Strategy*. We feel these extensive efforts to involve the public in the development of the *Strategy* have been successful in producing a thorough, balanced document that will be broadly supported statewide and lead to significant advances in conservation of Species of Greatest Conservation Need and their habitats.

Chapter/Section	Pages
2.1 Approach and Methods: Organizational Structure	2-1
6.1 Communication and Coordination for *Strategy* Development	6-1

B. The State describes its continued public involvement in the implementation and revision of its Strategy.

Communication and coordination with conservation partners and interested citizens will be key to effective plan implementation. After the *Strategy* is accepted by the U.S. Fish & Wildlife Service, the WDNR will develop outreach materials targeting the broader conservation public. These materials will be shorter and less technical, focused on informing and involving existing and potential conservation partners in implementation of conservation strategies. More detail on the goals and approaches for continued communication and coordination with the public after the plan is approved can be found in the following sections:

Chapter/Section	Pages
6.2 Communication and Coordination for Plan Implementation	6-3
Chapter 7 Review and Revision	7-1